

## EDITOR'S PAGE



## An Innovator Ahead of Her Time

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It has been well-recognized that the cardiovascular field has a dearth of female professionals and leaders, making it doubly important to honor those women who have managed to influence its direction and future generations.

Suzanne Buckner Knoebel, MD, a distinguished physician and leader in cardiovascular medicine, passed away on July 2, 2014, at age 87 years. Although born to a family of healthcare providers (her father, uncle, and brother were physicians; her mother was a nurse), Dr. Knoebel did not immediately enter medicine. After graduating from Goucher College in Baltimore, MD, with a degree in international relations (she later received an honorary doctor of science from her alma mater), she worked for several years in Hawaii at the statewide chamber of commerce (1).

At some point, medicine came into focus as a career path, and she returned to her home state of Indiana to attend medical school, graduating at age 33 years. She completed her training at Indiana University (IU) and traveled to the National Institutes of Health for a visiting fellowship with Eugene Braunwald, MD. Returning to IU, she played an important role in the development of the Krannert Institute, serving as its associate director from 1974 to 1990 under her lifelong mentor Charles Fisch, MD. As a glimpse of how important her contributions were, she was named the Herman C. and Ellnora D. Krannert Professor of Medicine in 1977, the professorship named in honor of the philanthropists whose gift allowed for the establishment of the Krannert Institute.

An innovator ahead of her time, Dr. Knoebel was a passionate advocate of harnessing the power of

technology to improve patient care and championed the use of computers in medicine. Among the programs she initiated was the use of telephone lines for the transmission of electrocardiograms from outlying areas to the medical center. At the time of her retirement in 2000, she was still actively using computers to interpret research electrocardiograms via a computer link to a core laboratory. She was also a pioneer in 3-dimensional imaging, with an active research program in this area as early as the 1980s, long before it became mainstream. Her publications spanned echocardiography, positron emission tomography, nuclear, and even cardiac magnetic resonance. Her influence on the Krannert program was long-standing and spanned the IU faculty careers of cardiology (and American College of Cardiology [ACC]) luminaries including Drs. Fisch, Feigenbaum, Surawicz, Zipes, McHenry, Prystowsky, Jack Williams, Eric Williams, Armstrong, Tom Ryan, and Kovacs, among others. Her omnipresence as a female physician leader had a profound influence on generations of trainees.

A lifelong clinician scientist, Dr. Knoebel served as assistant dean for research at IU, publishing nearly 100 papers. Although most were related to electrophysiology and imaging, later in her career she also published papers on the use of clinical databases, cost effectiveness, statistical modeling, strategies to improve decision making, and cross-institutional data sharing.

Dr. Knoebel served as president of the ACC from 1982 to 1983, a term of office that coincided with the national introduction of a new and dramatically different hospital payment system in 1983: diagnosis-related groups. At a time when few others recognized or understood the enormous implications of this shift to a prospective payment model, Dr. Knoebel clearly did. She spoke and wrote eloquently about evolving changes in the U.S. healthcare system.

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Although trained in a “golden age” of robust research funding and relatively unlimited clinical resources, her presidential plenary address at the 1983 ACC Annual Scientific Sessions focused on the newly developing tensions between quality of care and cost considerations:

*“...it is our responsibility, as the patient’s advocate, to maintain cardiovascular health care quality and cost factors in balance, from the concern that quality of medical care may be compromised in the name of cost-containment unless we are ever vigilant and credible...” (2).*

Dr. Knoebel also understood the implications of this coming seismic shift for the ACC, noting the need to include healthcare delivery when considering optimal health care and to expand what she termed the College’s “socioeconomic activities.” She also championed the need for clinical standards, despite considerable opposition, and helped make the first ACC/AHA guidelines a reality in 1984. In a reflection of the breadth of her involvement, she also chaired the government relations committee.

Dr. Knoebel’s vision and leadership was critical to the ACC during a turbulent time. As chair of the long-range planning committee, she led a rethinking of the College’s goals (3), which recognized the organization’s stellar 35-year history of educational excellence and innovation while deftly steering the ship toward increasing involvement in issues related to quality of care, effectiveness, cost consciousness, and advocacy. However, she did not neglect our roots, serving as chair of the learning center, ethics, awards, and grants committees and as Editor-in-Chief of the ACC’s *Current Journal Review*.

A true scientist, Dr. Knoebel turned to data and decision making as critical to the College’s and the profession’s future, noting that:

*“... a mechanism for demonstrating the quantitative relation among patient data, physician knowledge or skills, clinical decision-making and patient outcome will need to be developed and refined to a degree not previously required.... Whatever system is eventually established...it should be clinical oriented, have a wide spectrum of applications and be computer compatible. In the interest of adaptability, the system should be responsive to new knowledge and data. As a guide to research and education, it would be useful if the system assessed the potential of missing data for altering the decision pathway....Finally, the system will need to be valued by [ACC’s] membership” (2).*

Written more than 30 years ago (and, for perspective, before the introduction of the first Macintosh computer), this statement is amazingly prescient. It reads as a road map for today’s National Cardiovascular Data Registry, which was then still 14 years in the future, and presages current efforts to realize the concept of a learning healthcare system. Indeed, Dr. Knoebel practiced what she preached, serving as chair of the database committee and the angioplasty and electrophysiology databases in the early 1990s. Through these activities and others, she played a critically important role in the creation of 1 of the pillars of today’s College.

Dr. Knoebel became known nationally through her work with the ACC, and was an international role model for women. In 1983, she was named one of the “100 Most Important Women in America” by *Ladies’ Home Journal*, mentioned alongside such luminaries as Sally Ride, Nancy Reagan, Barbara Walters, and Julia Child. In 1973, she was one of 8 U.S. heart specialists selected to visit China at the invitation of the Chinese government (1). As the first woman faculty member at IU in cardiology, and as the first female president of the ACC, she was a visible example of feminine strength to those who followed in her footsteps. Indeed, in 1984 (the first year for which ACC membership by sex was tracked), just 2% of Fellows of the ACC were women, whereas today, 9% are women. This progress, although small, is due in no small part to her example and the efforts of the Women in Cardiology Council and Section to support the professional development of women cardiologists. Dr. Knoebel remained a dues-paying member of the Section until age 85 years, a dozen years after her retirement.

Dr. Knoebel also had a rich life outside of medicine. A lifelong interest in thoroughbred horses and horse racing was nurtured by summers at her grandfather’s horse farm and his tutelage at the track (1). She rode throughout her life, owning horses in Ohio, Kentucky, and elsewhere. She was a successful author of 8 books, including novels for adults and children’s books. The stories often revolved around 1 or both of her twin passions of medicine and horses, and her heroines often overcame great odds to become physicians. Although the extent to which these books are autobiographical is unknown, it is likely that they derived no small inspiration from her real-life experiences, given the era in which she came of age and her own circuitous route to medical school.

Honored in 2013 by the IU School of Medicine for “over a half century of friendship, devotion and caring while exhibiting the highest ethical and moral standards,” Dr. Knoebel’s legacy also includes several

generous gifts to her medical alma mater, including the creation of the Dr. Charles Fisch Research Enhancement Fund, support for the Krannert Institute, and a planned gift to establish the Buckner Family Scholarship, as well as the largest charitable donation in the history of the Goucher equestrian program.

Suzanne Buckner Knoebel will be remembered by her colleagues, fellows, friends, and College as a

groundbreaking visionary whose professional life has significantly affected modern cardiology and its practitioners. Her legacy can be seen today in the mission and strategic plan of the ACC (4,5).

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